Analysis of the Psychometric Properties of the Interpersonal Needs Questionnaire (INQ) Among Community-Dwelling Older Adults

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Objectives: This study evaluated the structure and validity of the use of the 18-item Interpersonal Needs Questionnaire (INQ-18), a measure of thwarted belongingness (TB) and perceived burdensomeness (PB), among older adults. **Method:** Community-dwelling older adults ($N = 284$; mean age = 73 years; age range = 64–96 years; 56% women) anonymously completed a questionnaire packet. **Results:** Principal axis factor analysis indicated that two factors should be retained. Items in the first factor reflected the concept of TB, whereas items in the second factor were consistent with the concept of PB. Both factors had medium-to-large positive correlations with hopelessness, depression, suicide ideation, and low meaning in life, providing evidence for convergent validity. **Conclusions:** Findings from this study support the use of the INQ-18 among community-dwelling older adults. © 2012 Wiley Periodicals, Inc. J. Clin. Psychol. 68:1008–1018, 2012.

Keywords: Interpersonal Needs Questionnaire; thwarted belongingness; perceived burdensomeness; suicide; depression

Late life is often associated with a number of interpersonal losses, including autonomy, relationships, roles, and status (Segal, Qualls, & Smyer, 2011). These factors might help to explain the high rate of completed suicide among older adults as compared with the general population. Between 2000 and 2007, adults aged 65 years and older in the United States had a substantially higher death rate by suicide (14.8 per 100,000) than the general population (11.0 per 100,000; Centers for Disease Control and Prevention [CDC], 2011). In addition, although persons aged 65 years and older comprise 12.9% of the U.S. population, this group accounted for 15.7% of suicide deaths in 2007 (CDC, 2011; U.S. Census Bureau, 2011). Unfortunately, the scope of suicide among older adults is likely to grow in the future as the baby boom cohort ages (Conwell, Van Orden, & Caine, 2011). Whereas research on suicide among older adults has uncovered a number of demographic risk factors (see Heisel, 2006, for a review), there is still a clear need for assessment of suicide risk that goes beyond demographic factors in order to improve suicide prevention efforts.

The Interpersonal-Psychological Theory of Suicide (IPTS) was developed in an effort to determine more sensitive and specific predictors of suicide risk and death. The IPTS proposes that in order for individuals to complete suicide, they must have both the desire for suicide and the ability to carry out the act (Joiner, 2005; Van Orden et al., 2010). Desire for suicide contains two important hypothesized components: a thwarted sense of *belongingness* and a feeling of perceived *burdensomeness* on others. Thwarted belongingness (TB) refers to a sense of profound alienation, including the feeling that one is not an integral part of any valued group, such as a family, a circle of friends, or society in general (Van Orden et al., 2010).

The two main hypothesized components of thwarted belongingness are *loneliness* and an *absence of reciprocal care*, defined as relationships "in which individuals both feel cared about and demonstrate care of another" (Van Orden et al., 2010, p. 582). In contrast, perceived burdensomeness (PB) refers to a self-view that one is defective and flawed, to the point of being a liability to others (Van Orden et al., 2010). The two main hypothesized components of perceived burdensomeness are *liability* and *self-hate* (Van Orden et al., 2010).

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The third variable, the capacity to carry out the act of suicide, refers to the *acquired capability* for self-harm, which includes habituation to pain and sense of fearlessness about death that is learned over time (Van Orden et al., 2010). We would argue that the IPTS is particularly well-suited to describe late life suicide because of the increased likelihood of experiencing a shrinking social network (i.e., decreased belongingness) and dependence on others due to functional decline (i.e., increased burdensomeness) experienced by many older adults.

Joiner and colleagues developed the Interpersonal Needs Questionnaire (INQ) to measure beliefs about TB and PB. The original unpublished version of the scale comprised 10 items measuring TB and 15 items measuring PB (INQ-25), but was later reduced to five items measuring TB and 7 items measuring PB (INQ-12) to reduce multicollinearity between the constructs and increase the precision of measurement (Van Orden, Witte, Gordon, Bender, & Joiner, 2008). An 18-item INQ (INQ-18) was published in a book on the IPTS, but did not include information about the development of the scale or the scale's psychometric properties (Joiner, Van Orden, Witte, & Rudd, 2009). Among undergraduate students who took the INQ-12, internal consistency was moderate, with a Cronbach's alpha of .85 for the TB subscale scores and .89 for the PB subscale scores (Van Orden, Witte, Gordon et al., 2008).

Similar results have been reported in other studies of undergraduates using the INQ-12 (Davidson, Wingate, Rasmussen, & Slish, 2009) and the 10-item TB subscale (Van Orden, Witte, James, et al., 2008), as well as in a study using the INQ-25 with military personnel (Nademin et al., 2008). Internal consistency for the 10 items measuring TB was also moderate in a sample of adults with substance abuse disorders ($\alpha = .81$; You, Van Orden, & Conner, 2010). Test-retest reliability (with a mean follow-up of 24 days) was .73 for scores on each subscale of the INQ-25 among adults with opiate dependence (Conner, Britton, Sworts, & Joiner, 2007).

Although several studies have used different versions of the INQ with a variety of populations, there are only two studies that have examined the psychometric properties of the INQ, an important step for eventual wide-spread use of the scale. Bryan (2010) evaluated the clinical utility of a 10-item version of the INQ (INQ-10) with deployed military personnel. Results indicated PB and TB were related ($r = .53$) and had medium-to-large correlations with suicide ideation, global mental health, insomnia, and PTSD. The 10 items explained 54.2% of the variance, and the items on both factors had moderate internal consistency ($\alpha = .81$ for PB and $\alpha = .86$ for TB). More importantly, a score of 1 for PB and 3.2 for TB on the INQ-10 were the most useful cutoff scores for detection of current suicide ideation (Bryan, 2010). These findings suggest that scores on the INQ-10 can improve clinicians' ability to identify current suicide ideation among military personnel.

More recently, the INQ-12 was evaluated among a large sample of undergraduate students (Freedenthal, Lamis, Osman, Kahlo, & Gutierrez, 2011). Confirmatory factor analysis suggested the INQ-12 comprised two subfactors (representing TB and PB), united by a general interpersonal distress factor. Scale items loaded cleanly on the TB factor, but not as well on the PB factor, perhaps implying the PB factor was not measuring a distinct construct (Freedenthal et al., 2011). Internal consistency was high for scores on both subscales ($\alpha > .90$) and TB and PB were moderately correlated with each other ($r = .50$). Providing support for the criterion-related validity of the INQ-12, TB and PB had medium-to-large positive correlations with depression, hopelessness, current suicide ideation, and current suicide proneness.

In addition, both constructs had medium-to-large negative correlations with measures of perceived social support and reasons for living (Freedenthal et al., 2011). Freedenthal and colleagues (2011) noted a floor effect in the INQ-12 scores in their sample and suggested that future research examine the INQ among older adults and/or terminally ill individuals, for whom PB might be more salient.

To date, only one study has used the PB subscale of the INQ-12 with a sample of 162 adults aged 55 years and older who were recruited from a university-based research registry and primary care settings (Cukrowicz, Cheavens, Van Orden, Ragain, & Cook, 2011). Internal consistency for the items included in the subscale was high ($\alpha = .90$), and PB had large, positive correlations with hopelessness, depression, loneliness, and suicide ideation, providing preliminary support for the use of the INQ with older adults. However, this study did not attempt a components

analysis or factor analysis of the inter-item correlations and did not report information on the TB subscale of the INQ.

The purpose of the present study was to examine more fully the structure and validity of use of the INQ in an older adult population. The scale was expected to have two separate factors corresponding to TB and PB, as hypothesized by the IPTS. With regard to the validity of the scores on the INQ, both factors were expected to be positively associated with known risk factors for late life suicide, including hopelessness, depression, suicide ideation, and lack of meaning in life. TB was expected to have a significant negative correlation with reciprocal care and a significant positive correlation with loneliness, and these variables were expected to be more strongly associated with TB than PB. PB was expected to have a significant negative correlation with self-esteem (representing the opposite of self-hate in the theoretical model) and a significant positive correlation with loss of personal and social worth (representing liability in the theoretical model), and these variables were expected to be more strongly associated with PB than TB.

Method

Participants and Procedure

Participants were 284 community-dwelling older individuals (mean [*M*] age = 73.3 years, standard deviation [*SD*] = 7.1 years, age range = 64–96 years, 55.6% female) recruited through a mailing to 789 older adults, whose names were randomly drawn from a voter registration list, representing a 36% return rate. In the random sample, there were 433 women (54.9%) and 356 men (45.1%), with a mean age of 73.9 years (*SD* = 7.4 years, age range = 64–99 years). A chi-square goodness-of-fit test indicated there was no statistically significant difference in the proportion of men and women between the random sample and the completed sample, χ^2 (1, $n = 284$) = .06, $p = .81$.

A one sample *t* test indicated that the completed sample was similar in age to the random sample, $t(283) = 1.44$, $p = .15$. No other demographic data were available for the random sample. Four additional packets were returned, but excluded from all analyses because the questionnaires were either incomplete or the participant's spouse completed the packet for the participant. The completed sample had 15.0 years of education (*SD* = 3.0 years, range = 8–25 years). The majority of the sample were European American (86.3%), followed by Native American/Alaskan Native (3.5%), African American (3.2%), Latino(a) (2.8%), Multiracial (2.8%), and Asian American (0.7%). Relationship statuses were reported as married (68.0%), widowed (20.4%), divorced (8.5%), single/never married (2.1%), and in a domestic partnership (1.1%).

Participants received a brief prenotice letter delivered by mail introducing the study. Approximately 2 weeks later, they received an envelope containing the following items: a cover letter with a general description of the study; an IRB-approved informed consent form; a questionnaire packet; a debriefing statement, including the rationale for study and crisis resources should participation raise issues requiring clinical attention; and, a self-addressed stamped envelope for returning the questionnaire packet. All potential participants received a thank you/reminder postcard approximately 1 week after the questionnaire packet.

Measures

TB and PB. The INQ-18 is an 18-item self-report measure of TB and PB (Joiner et al., 2009). Respondents rate how true each item is for them recently, on a scale ranging from 1 (*not at all true for me*) to 7 (*very true for me*). Subscale scores are calculated as the sum of all subscale items; items on the TB subscale are reverse coded so that higher scores reflect higher levels of TB and PB. Among different versions of the INQ, Cronbach's alpha coefficients greater than .85 were reported for scores on both subscales in samples of undergraduates (e.g., Davidson, Wingate, Rasmussen, & Slish, 2009; Van Orden, Witte, Gordon et al., 2008) and military personnel (Nademin et al., 2008), and a Cronbach's alpha coefficient of .81 was reported for the scores

Table 1
Psychometric Properties of the Study Measures

						Range	
	M	*SD*	α	Skewness	Kurtosis	Potential	Actual
INQ							
Belongingness (8)	17.83	11.59	.91	1.66	2.32	8–56	8–56
Burdensomeness (10)	15.05	6.37	.75	2.55	8.84	10–70	10–52
Hopelessness (20)	30.74	8.79	.88	1.58	3.03	20–80	20–70
Depression (9)	2.73	3.57	.83	2.74	9.60	0–27	0–22
Suicide Ideation (10)	11.83	4.26	.88	4.24	23.56	10–50	10–46
Meaning in Life (8)	11.90	4.31	.83	1.64	3.29	8–40	8–32
Loss of Worth (7)	10.91	4.51	.82	1.69	2.79	7–35	7–29
Reciprocal Care (18)	65.09	7.77	.94	− 1.80	4.03	18–72	28–72
Loneliness (3)	3.91	1.41	.82	1.76	2.87	3–9	3–9
Self-Esteem (1)	4.28	.87	N/A	− 1.31	1.90	1–5	1–5

Note. M = mean; SD = standard deviation; INQ = Interpersonal Needs Questionnaire.
Number of items in each scale listed in parentheses.

on the TB subscale among adults with substance abuse disorders (You et al., 2010). Cronbach's alpha coefficients in the present study are reported in Table 1.

Hopelessness. The Beck Hopelessness Scale (BHS) is a 20-item self-report assessment of pessimism and hopelessness (Beck, Weissman, Lester, & Trexler, 1974). For the current study, the response choices were modified from a true/false format to a 5-point scale, ranging from 1 (*rarely or none of the time*) to 4 (*most or all of the time*). This type of response format has been used successfully with research samples of older adults (Heisel & Flett, 2005; Neufeld, O'Rourke, & Donnelly, 2010) and was used to increase the variability of total scores. Positively worded items are reverse-scored so that higher overall scores indicate greater hopelessness. Previous research provides evidence for the score reliability and validity for the use of the BHS among depressed older adult outpatients (Hill, Gallagher, Thompson, & Ishida, 1988) and older adults in the general population (Greene, 1981). In the current study, internal consistency of the scores was moderate (see Table 1).

Depression. The Patient Health Questionnaire (PHQ-9) is a self-report 9-item measure of depressive symptoms, based on the Diagnostic and Statistical Manual of Mental Disorders, 4th Edition (DSM-IV; American Psychiatric Association, 1994) diagnostic criteria for major depressive disorder (Kroenke, Spitzer, & Williams, 2001). Respondents rate how often they experienced each symptom over the previous 2 weeks, on a scale ranging from 0 (*not at all*) to 3 (*nearly every day*). Scores for each item are added together so that higher overall scores indicate greater severity of depression. Previous research provided support for the score reliability and validity for the use of the PHQ-9 with individuals across the lifespan (age range: 14–93 years; Martin, Rief, Klaiberg, & Braehler, 2006). The Cronbach's alpha coefficient for the PHQ-9 was moderate in the current sample (see Table 1).

Suicide ideation, meaning in life, and loss of worth. The Geriatric Suicide Ideation Scale (GSIS) is a self-report measure of suicide ideation and related factors in older adults, comprising ten items measuring Suicide Ideation, eight items measuring Perceived Meaning in Life, and seven items measuring Loss of Personal and Social Worth (Heisel & Flett, 2006). Respondents rate to what extent they agree with each item, ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). Items on the Perceived Meaning in Life subscale are reverse-scored so that higher scores indicate *low* meaning in life. Previous research reported evidence for score reliability and validity for the use of the GSIS among older adults and provided support for use

of the Suicide Ideation subscale as a brief measure of late-life suicide ideation and the Perceived Meaning in Life subscale as a measure of psychological resiliency (Heisel & Flett, 2006; Marty, Segal, & Coolidge, 2010; Segal, Marty, Meyer, & Coolidge, 2012). Cronbach's alpha coefficients for the current study are reported in Table 1 and indicate moderate consistency among item scores for each of the three measures.

Reciprocal care. The Sense of Belonging Instrument-Psychological Experience subscale (SOBI-P) is an 18-item self-report scale measuring the psychological experience of belonging in adults (Hagerty & Patusky, 1995). Respondents rate how much they agree with each statement, on a scale ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). A high score on the SOBI-P indicates that the individual feels valued, needed, and accepted by others. The SOBI-P has been used in several studies examining belongingness in older adults (e.g., Kissane & McLaren, 2006; McLaren, Gomez, Bailey, & Van Der Horst, 2007). In the current study, the Cronbach's alpha coefficient for the SOBI-P was high (see Table 1).

Loneliness. The Three-Item Loneliness Scale (3LS) is a measure of subjective loneliness (Hughes, Waite, Hawkley, & Cacioppo, 2004). Respondents rate how often they feel a certain way (e.g., "How often do you feel that you lack companionship?"), ranging from 1 (*hardly ever*) to 3 (*often*). Answers from the three items are added together so that overall scores indicate more loneliness. Evidence for the internal consistency and validity for use of the 3LS with older adults has been reported in two large-scale studies (Hughes et al., 2004). In the current study, the estimate of internal consistency for the scores was moderate (see Table 1).

Self-esteem. The Single-Item Self-Esteem Scale (SISE) is a modified version of the 10-item self-report measure of global self-esteem developed by Rosenberg in 1965 (Robins, Hendin, & Trzesniewski, 2001). Respondents rate how much they agree with the statement, "I see myself as someone who has high self-esteem," on a scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). There is evidence of score reliability and validity for use of the SISE among diverse samples of children and adults, and the test has been shown to be an acceptable alternative to the Rosenberg scale within the context of research (Robins et al., 2001). The SISE has also been successfully used in a large-scale cross-sectional study of self-esteem over the lifespan (age range = 9 – 90; Robins, Trzesniewski, Tracy, Gosling, & Potter, 2002). Because the scale has one item, internal consistency cannot be calculated for the current sample.

Results

Means, standard deviations, Cronbach's alpha coefficients, skewness, and kurtosis were calculated for all measures used included in the study (see Table 1). A chi-square goodness-of fit test indicated there was no statistically significant difference in the proportion of men (44.4%) and women (55.6%) in the respondent sample, χ^2 (1, $n = 284$) = 3.61, $p = .06$.

Principal Axis Factor Analysis

To determine the number of factors needed to explain the underlying dimensions of the inter-item correlations of the INQ, the 18 items of the INQ were subjected to a principal axis factor analysis (PFA) using SPSS Version 19. Because theory and past research indicates that TB and PB are inter-correlated, an oblique solution was obtained using a promax rotation (Thompson, 2004). The suitability of the data for PFA was assessed. Inspection of the correlation matrix revealed the presence of several coefficients of .3 and above and only one coefficient greater than .9, suggesting that the data were suitable for PFA and multicollinearity was not a problem. In addition, the Kaiser-Meyer-Olkin value (a measure of sampling adequacy) was .86, exceeding the recommended value of .6, providing further evidence that PFA was appropriate (Tabachnick & Fidell, 2007).

PFA with promax rotation ($\kappa = 4$) resulted in four factors with eigenvalues exceeding 1.00 (5.88, 2.89, 1.26, and 1.17 respectively), accounting for 62.2% of the variance. Although the scree

Table 2
Pattern and Structure Matrices for Principal Axis Factor Analysis With Promax Rotation

	Pattern matrix		Structure matrix	
Item	TB	PB	TB	PB
11. I belong	**.831**	.063	**.853**	.352
17. Close to others	**.825**	−.008	**.822**	.278
10. Others care about me	**.808**	−.070	**.783**	.211
16. Others I can turn to	**.793**	−.018	**.787**	.258
13. Caring and supportive friends	**.761**	.096	**.794**	.360
18. Satisfying interaction	**.754**	−.060	**.733**	.202
9. Matter to others	**.723**	−.033	**.712**	.218
5. Contribute to well-being of others	**.474**	.053	**.492**	.217
1. Others would be better off	−.023	**.813**	.259	**.805**
2. Others would be happier	−.027	**.730**	.227	**.721**
4. Burden on society	−.030	**.627**	.188	**.616**
8. Make things worse for others	−.109	**.598**	.099	**.561**
3. Failed others	.036	**.563**	.232	**.576**
14. Disconnected from others	.184	**.490**	.354	**.554**
7. Others wish they could be rid of me	−.064	**.426**	.083	**.403**
6. Burden on others	.054	**.408**	.196	**.427**
15. Feel like an outsider	.028	**.364**	.154	**.374**
12. Rarely interact with others	.085	**.350**	.206	**.380**

Note. TB = thwarted belongingness; PB = perceived burdensomeness.
Factor loadings > .350 are in boldface.

test indicated that either a four- or two-factor solution may be appropriate, Velicer's minimum average partial (MAP; O'Connor, 2000; Velicer, 1976) test indicated that two factors should be retained. Based on the results of the MAP test and because the INQ was originally designed to measure two constructs (i.e., thwarted belongingness and perceived burdensomeness), an additional PFA with promax rotation was performed with two oblique factors extracted. The two-factor solution explained 48.7% of the variance, with the first factor contributing 32.6% and the second factor contributing 16.1%. The eigenvalues were 5.88 (95% confidence interval [CI], 4.91, 6.85) and 2.89 (95% CI, 2.41, 3.36) respectively. Cronbach's alpha coefficients are reported in Table 1. The first factor contained items that were consistent with the concept of thwarted belongingness (TB; see Table 2), whereas items from the second factor reflected the concept of perceived burdensomeness (PB; see Table 2). On these newly-derived factors, TB and PB factor scores were moderately and positively correlated with each other ($r = .35$).

Criterion-Related Validity Analysis

Criterion-related validity was assessed with correlations using the factors derived from the PFA (see Table 3). As hypothesized, the two factors had medium-to-large positive correlations with hopelessness, depression, suicide ideation, and meaning in life (note that the Meaning in Life scale was reverse-scored, so that high scores indicate low perceived meaning in life), providing evidence of concurrent validity.

Also as hypothesized, the TB subscale was negatively correlated with high reciprocal care ($r = -.38$) and positively correlated with loneliness ($r = .37$). The PB subscale was negatively correlated with a measure of self-esteem ($r = -.38$) and positively correlated with a measure of loss of worth ($r = .66$). Unexpectedly, PB had stronger correlations with high reciprocal care ($r = -.65$) and loneliness ($r = .62$) than the TB subscale. Also unexpectedly, the correlation between self-esteem and TB was nearly the same as the correlation between self-esteem and PB ($r = -.33$ and $r = -.38$, respectively).

Table 3
Correlations for the Criterion-Related Validity Analysis

	Thwarted belongingness	Perceived burdensomeness
Hopelessness	.43*	.59*
Depression	.33*	.57*
Suicide Ideation	.39*	.54*
Meaning in Life	.49*	.46*
Validity measures for Belongingness		
Reciprocal Care	− .38*	− .65*
Loneliness	.37*	.62*
Validity measures for Burdensomeness		
Self-Esteem	− .33*	− .38*
Loss of Worth	.35*	.66*

*$p < .001$.

Discussion

The aim of the present study was to examine the structure and validity of the use of the INQ, a previously developed measure of TB and PB, among a large sample of community-dwelling older adults. Results indicated that a two-factor solution would be most appropriate to explain the inter-item correlations. Notably this model was consistent with the concepts of TB and PB as hypothesized by the IPTS (Joiner, 2005; Van Orden et al., 2010). The findings show clear evidence of the internal consistency of the scores on the INQ, as measured by Cronbach's alpha coefficients, similar to previously reported coefficients in other samples (e.g., Bryan, 2010; Cukrowicz et al., 2011; Freedenthal et al., 2011; Van Orden, Witte, Gordon et al., 2008).

The findings from the current study provided support for the use of the INQ as a valid measure of TB and PB. The first factor, representing TB, had a statistically significant negative relationship with a measure of reciprocal care and a statistically significant positive relationship with a measure of loneliness, indicating evidence of discriminant and convergent validity. This suggests that older adults who do not feel close to others and/or feel lonely are also likely perceive that they are not an integral part of any valued group.

In addition, PB had a statistically significant negative relationship with a measure of self-esteem and a statistically significant positive relationship with a measure of loss of worth, also indicating evidence of criterion-related validity. This suggests that older adults who have low self-esteem and/or feel worthless are also likely to perceive that they are a liability to others. Also supporting the validity of the INQ were the correlations between the factors and the mental health variables, all of which indicated these constructs were positively associated with risk factors for late-life suicide (i.e., hopelessness, depression, suicide ideation, and low meaning in life).

Mitigating the validity results were the correlations between PB and the measures hypothesized to correlate more strongly with TB. The factor associated with PB had stronger relationships with the reciprocal care and loneliness measures than the factor associated with TB. In addition, the relationship between self-esteem and TB and was nearly identical to that of PB. These findings provided mixed support for the hypothesized strength of relationships between TB, PB, and the validity measures. This could suggest that the measures chosen to assess validity in the present study were not ideal representations of the construct in question. For example, a one-item self-esteem question was chosen to represent the opposite of self-hate, which is one of the hypothesized components of PB according to the IPTS (Van Orden et al., 2010).

Perhaps the assumption that self-esteem and self-hate are on opposite ends of a continuum of beliefs about oneself was not entirely accurate. Another explanation might be that TB and PB were not sufficiently detected by the INQ in this sample. Similar to Freedenthal et al. (2011), the mean scores for TB and PB in the current study were low, indicating a possible floor effect. Perhaps studies with clinical samples (e.g., people who are currently suicidal) would find more

variability in the scores. Given that one goal of the IPTS is to improve the identification of suicide risk, the clinical utility of the INQ should be investigated among older adults, similar to that of military personnel (e.g., Bryan, 2010).

The mixed validity findings suggest an important avenue for further research, namely, to clarify the relationship between TB and PB. Specifically, researchers should examine the extent to which TB and PB are distinct variables that should be measured separately or if they are subcomponents of another variable, consistent with the findings of Freedenthal et al. (2011), which discovered the two factors of the INQ-12 were united by a general factor of interpersonal distress. In a recent article on the IPTS and late-life suicide, Van Orden and Conwell (2011) conceptualized TB and PB *together* as representing social disconnectedness.

The definitions used for both TB and PB mentioned the importance of interpersonal connectedness, with TB signifying the absence of positively valenced connections and PB signifying the presence of negatively valenced connections (Van Orden & Conwell, 2011). Longitudinal research that examines how TB and PB each change over time as suicide ideation fluctuates (e.g., for someone who begins psychotherapy or pharmacotherapy) might be useful to further clarify these concepts. Longitudinal research should also help to further establish reliability of the INQ items, such as test-retest reliability, and other types of validity of the use of the INQ, such as predictive validity, which would be helpful in suicide prevention efforts.

Other important research questions are the extent to which TB and PB are related to personality features (e.g., normal personality traits and/or features of personality disorders), which are known to be associated with risk and resilience for suicide in later life (Segal et al., 2012) and the extent to which TB and PB are related to resilience to suicide, such as reasons for living among older adults (Miller, Segal, & Coolidge, 2001). As public awareness and knowledge accumulate about the important contributions of TB and PB to late life suicide, researchers may also be interested in exploring attitudes toward and knowledge about these concepts among older adults and mental health professionals, as has been done with other suicide related topics (e.g., Segal, 2000; Segal, Mincic, Coolidge, & O'Riley, 2004).

Further exploration of the measurement of PB should also be a focus of future research. The extant literature regarding perceived burden on others and suicide in older adults has largely focused on those with advanced medical illness (see McPherson, Wilson, & Murray, 2007, for a review), with limited information regarding PB among older adults who are not dealing with a terminal illness. This body of research indicates that PB is a significant factor in older adults with advanced disease who wish to hasten death. McPherson and colleagues (2007) suggested that work regarding PB could benefit from a hypothesis-driven approach to more fully understand the relationships between PB and other variables.

Additionally, McPherson et al. (2007) noted that researchers have used various ways of assessing PB, making comparisons across studies difficult. The validity analysis in the current study indicated that constructs hypothesized to be more closely associated with TB (i.e., reciprocal care and loneliness) were more strongly correlated with PB. These findings suggest that further refinement of the PB subscale is needed. Finally, we recognize that some items on our derived scales had relatively low factor loadings on the pattern matrix and the structure matrix (specifically item 5 in TB and items 7, 6, 15, and 12 in PB; see Table 2). Researchers interested in even briefer versions of these scales should examine the psychometric impact if these items were to be eliminated, especially if the same items have lower loadings in new samples.

One limitation of the current study is the use of a convenience sample mostly made up of well-educated European Americans, with a relatively low level of current suicide ideation, restricting the generalizability of the findings to other culturally diverse and clinical populations. Future research should include older adults of diverse racial/ethnic backgrounds, different socioeconomic status, geographical locations (for example, rural vs. urban areas), and clinical populations, as TB and PB may operate differently in these groups. Indeed, there is some reason to believe that diverse risk and resilience factors for suicide in later life vary among individual with different ethnic and cultural backgrounds. For example, in a recent study of suicide resilience, June, Segal, Coolidge, and Klebe (2009) found that the relationship between religiousness and reasons for living was stronger for African American older adults, whereas the relationship between social support and reasons for living was stronger for European American older adults.

Nevertheless, the results from the current study can be used to compare with clinical samples of older adults in future studies.

A second limitation is the exclusive use of self-report data. Using a combination of self-report questionnaires, collateral reports, and clinician-rated measures might strengthen the conclusions of future studies. Despite these limitations, the findings from this study generally support the use of the INQ with community-dwelling older adults and suggest that future research studies should further investigate the relationship between TB and PB in this population. We strongly believe that further refinement of the INQ, and the Interpersonal-Psychological Theory of Suicide in general, will eventually help to improve the identification, assessment, and treatment of older adults at risk for suicide.

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